

REMARKS

Claims 1-2, 5-9, 70, 75-91 were pending in the current application.
Reexamination and reconsideration of all of the claims are respectfully requested.

35 U.S.C. §§ 102/103

Chuang

The Office Action rejected claims 75, 79-81, 83, 86 and 90 under 35 U.S.C. § 102(b) based on Chuang et al. U.S. Patent 6,064,517 (“Chuang”). The Office Action also rejected claims 76 and 87 under 35 U.S.C. §103 based on Chuang.

The Office Action relies on FIG. 17 of Chuang to reject the present claims. Applicants note that while FIG. 17 of Chuang does disclose a system comprising a catadioptric group 1701 and focusing group 1702, the Office Action solely focuses on the focusing group 1702 as allegedly forming the claimed “imaging subsystem.” Applicants submit that the imaging subsystem as claimed is broader than simply the focusing group 1702 of Chuang, as the imaging subsystem is said to be “configured to receive said light energy from said illumination system and direct light energy toward said specimen...” This is more than merely the lensing arrangement but also, based on the requirement to “direct light energy toward said specimen,” includes the Mangin mirror element in catadioptric group 1702. Applicants note that in the present application, as an example, FIG. 27 is said to be “an approximately 0.28 mm field design having approximately 26 mm diameter” and includes a mangin mirror element. Other examples of imaging subsystems having limited diameters, namely diameters under the claimed 100 millimeters, are presented in the specification.

Applicants submit therefore that taking the entirety of FIG. 17 into account, the imaging subsystem, to the extent one is present in Chuang, would be interpreted to include catadioptric element 1706, which is over 100 millimeters in diameter. Thus Chuang does not anticipate claim 75 (“said imaging subsystem comprising a plurality of optical elements all aligned along an axis and each having maximum diameter less than

approximately 100 millimeters”) or claim 83 (“an imaging subsystem configured to receive said light energy and direct light energy toward said specimen using a plurality of elements having a maximum diameter less than approximately 100 millimeters”) or claim 86 (“directing light energy toward said specimen using a plurality of optical elements aligned collectively along a single axis, each optical element having maximum diameter less than approximately 100 millimeters”) or claims dependent therefrom, nor does Chuang render dependent claims 76 and 87 obvious as they include limitations not present in Chuang. Thus Claims 75, 76, 79-81, 83, 86, 87, and 90 are allowable based on Chuang.

Chuang and Shafer

The Office Action rejected claims 1, 6-9, 82, 85, and 91 under 35 U.S.C. § 103(a) based on Chuang in view of Shafer et al., U.S. Patent 5,717,518 (“Shafer”). Claim 1 is independent and all others are dependent.

Regarding independent claim 1, the Office Action relies on Shafer for the “illumination system [comprising] an arc lamp having a wavelength in the range of less than approximately 320 nanometers.” Office Action, p. 4. The remainder of the claim is purportedly shown by Chuang. However, as noted above, Chuang does not include a design wherein the salient elements are each less than 100 millimeters in diameter as required by the express language of claim 1 (“said imaging subsystem comprising a plurality of elements all aligned along a single axis, each element having diameter less than approximately 100 millimeters”). The FIG. 17 embodiment of Chuang shows a catadioptric element 1706 that exceeds this value. Thus claim 1 is not obvious based on Chuang in view of Shafer.

Applicants further submit that there is no motivation to combine Chuang with Shafer present in the references themselves, and it is only through the use of hindsight that such a combination could be made. Use of hindsight in this manner is improper. For this further reason, claim 1 and those claims dependent on claim 1 or claims 75, 83, or 86 are allowable over the cited references.

Liang and Shafer

The Office Action rejected claims 1, 2, 5, 70, 75-78, 83, 84, and 86-89 under 35 U.S.C. 103 based on Liang, U.S. Patent Publication 2004/0051957 in view of Shafer.

Liang illustrates a miniature microscope array (MMA) of specific design having certain magnifications, NAs, outer diameters (ODs) and fields of view (FOVs). The outer diameter of the Liang MMA is said to be “substantially 1.6-2.0 mm or less” (Liang, paragraph [0009]). Several interrelationships between measurements are disclosed, such as FOV to OD and M to NA, and the patent as noted in the Office Action states that the FOV “for the three or four lens designs is preferably substantially 220-240 μm or more.” However, while the Liang FOV can, based on the totality of the restrictions presented, be more than 0.240 millimeters, the design cannot support or be said to disclose a design having a field of view of over 0.400 millimeters as claimed, an approximately 66% increase over the supported FOV range spelled out in paragraph [0009] of Liang.

Simply because Liang states that the FOV is “substantially 220-240 μm or more,” this assertion does not support nor can Liang be said to disclose a design that shows or anticipates every conceivable design having a larger field size. For example, a design having a 20 meter field of view would not be anticipated by Liang, as Liang shows no such design. This becomes a question of degree: Since Liang does not disclose nor be said to present a design where field size can be from “substantially 220-240 μm ” through infinity, as is apparently alleged in the Office Action, the questions becomes what in fact does Liang disclose with respect to an actual FOV and what FOV can Liang be said to support?

A similar situation was presented in *Ortho-McNeil Pharmaceutical, Inc. v. Caraco Pharmaceutical Laboratories, Ltd.*, Appeal 06-1102 (Fed. Cir. January 19, 2007), wherein the phrase “about 1.5” was analyzed. The Federal Circuit noted:

The use of the word “about,” avoids a strict numerical boundary to the specified parameter. Its range must be interpreted in its technological and stylistic context. We thus consider how the term

... was used in the patent specification, the prosecution history, and other claims. It is appropriate to consider the effects of varying that parameter, for the inventor's intended meaning is relevant. Extrinsic evidence of meaning and usage in the art may be helpful in determining the criticality of the parameter.

Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed. Cir. 1995) (citations omitted). *See also Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1554 (Fed. Cir. 1996) (stating that "the usage [of the term 'about'] can usually be understood in light of the technology embodied by the invention"); *Conopco, Inc. v. May Dep't Stores Co.*, 46 F.3d 1556 (Fed. Cir. 1994) (discussing the criticality of the claimed ratio to the invention and whether or not one of ordinary skill in the art would have read the modifier "about" expansively in light of the intrinsic evidence).

Ortho McNeil at p. 9.¹

Similarly, use of the phrase "substantially 220-240 μm or more" employed in Liang requires interpretation in view of what was actually intended by the Liang disclosure and invites if not outright requires an examination of the specification. As noted, varying the term to include an infinite or extremely large field of view was obviously not intended by Liang. However, a review at the actual disclosure of Liang does provide insight into the intended meaning by the phrase and the actual FOV supported by the design.

Liang discusses actual implementation of the design and specifically arrays or rows of objectives at paragraphs [0057]-[0059], which state:

For microscope array applications that image a large continuous object, it is preferred that FOV gaps between

¹ The text of the opinion can be found at <http://fedcir.gov/opinions/06-1102.pdf>

neighboring objectives in a row be covered using additional rows of objectives. The total number of rows is partially determined by the FOV to OD ratio. For example, approximately eight rows correspond to a **FOV-to-OD ratio of 0.15**, in accordance with a particularly preferred embodiment wherein the magnification has a magnitude of about 7. Currently preferred array assembly techniques provide for packing the objectives into a hex array. The distances between the rows are 1.5 mm. ...

These 12 rows of objectives correspond to a **FOV-to-OD ratio of about 0.1**, or the number of rows, i.e., 12, times the FOV-to-OD ratio is about 1.2. **The FOV-to-OD ratio has a lower limit of about 0.1 according to a preferred embodiment. The FOV-to-OD ratio is around 0.15** for the preferred embodiment including around 8 rows, or 8 times $0.15=1.2$. So, if one desired to tightly pack the 13 rows, then **the lower limit [of FOV-to-OD ratio] may be reduced to about $1.2/13 \sim 0.09$**²

(emphasis added).

In other words, the actual application of the Liang design corresponds to a FOV-to-OD ratio between “about” 0.09 to “around” 0.15. While many varying magnification to NA formulations are presented, no FOV-to-OD ratio larger than 0.15 is expressly called out in Liang, and no ODs (outside diameters) smaller than 1.6 mm are suggested. While the paragraph cited in the Office Action suggests that the FOV to OD ratio may be more than 0.15, no such design having an FOV to OD ratio greater than “around” 0.15 is anywhere described in Liang. (Office Action, p. 5; Liang, paragraph [0010]). Further, no design showing a FOV greater than the “substantially 220-240 μm or more” is shown in

² Several relationships are called out in Liang, including some that actually might be thoroughly unusable, including but not limited to relationships between magnification and NA, FOV, magnification and OD, etc.,. The FOV to OD definition provides the clearest representation of the design and its limitations and actual intended operation. Failure to meet these clearly articulated FOV to OD ratios and requirements indicate that a design falling short of the express parameters had not been realized by Liang.

Liang, but the maximum FOV appears to be in the cited range or possibly slightly higher based on use of the word “around.” However, the field of view cannot be said to be 66 per cent higher based on the language employed in Liang. A FOV of 0.400 mm, recited in all pending claims of the present application, using a Liang OD of greater than 0.16 mm yields a FOV-to-OD ratio of over 2.5, a full 1666% increase over the .15 value actually called out as the highest FOV-to-OD numeric value in Liang. Thus while an FOV a full 66 per cent larger than that disclosed in Liang might be misconstrued to be supported by the Liang teachings using the expansive “substantially...or more” language, in reality no such design is described in or supported by Liang. As with a design having a 20 meter or infinite FOV that could be misread to fall within the “substantially 220-240 μ m or more” wording of Liang, in reality the specification does not support an FOV much larger than the 0.240 millimeters disclosed. Thus Applicants submit that Liang does not disclose nor suggest a design having “a field size in excess of approximately 0.4” (claim 75), or similar language.

Applicants further submit that there is no motivation to combine Liang with Shafer, as suggested, present in the references themselves, and it is only through the use of hindsight that such a combination could be made. Use of hindsight in this manner is improper. For this further reason, claims 1, 75, 83, and 86 and claims depending therefrom are allowable over the cited references.

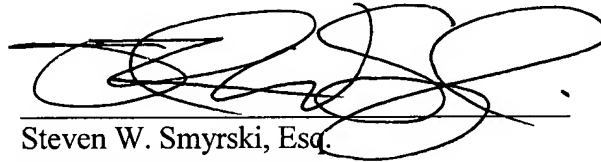
As none of the cited references disclose systems or methods having all of the limitations recited in the independent claims, as amended, Applicants submit that the claims are not rendered obvious by the references, either alone or in combination. Applicants therefore respectfully submit that independent claims 1, 75, 83 and 86 are allowable over the references of record, as such claims as amended are neither anticipated nor obvious based on those references. Further, claims depending from claims 1, 75, 83, and 86 are allowable as they depend from an allowable base claim.

CONCLUSION

In view of the foregoing, it is respectfully submitted that all claims of the present application, as amended, are in condition for allowance. Reconsideration of all of the claims is respectfully requested and allowance of all the claims at an early date is solicited.

Applicants believe that no fees are required with the present response in addition to those provided herewith. Should it be determined for any reason an insufficient fee has been paid, please charge any insufficiency to ensure consideration and allowance of this matter to Deposit Account 502026.

Respectfully submitted,



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